

Features

Regulated Converters

- 40mW max. No Load Power Consumption
- High Efficiency up to 76%
- Isolated Output 3kVAC / 1 min
- SCP, OVP Protection
- Wide Operating Temperature Range:
-40°C to +85°C
- Universal Input 85-305VAC



RAC03-SER/277

3 Watt Single Output



Description

The modules of the RAC03-SER/277 series are regulated AC/DC converters with 3kVAC isolation and a round, flat shape. This series has been designed to offer low stand-by consumption and an ultra-wide input voltage range. Uses include a variety of applications in building automation, security systems and communication systems.

Selection Guide

Part Number	Input Voltage Range (VAC)	Output Voltage (VDC)	Output Current (mA)	Efficiency typ. (%)	Max. Capacitive Load (µF)
RAC03-3.3SER/277	85-305	3.3	900	68	22000
RAC03-05SER/277	85-305	5	600	70	7500
RAC03-12SER/277	85-305	12	250	74	1000
RAC03-24SER/277	85-305	24	125	76	200

Model Numbering



Notes:

Note1: add suffix "-TRAY" for Tray packaging, without suffix standard cardboard box packaging.

Examples:

e.g. RAC03-05SER/277-TRAY, Single Output, 5Vout and Tray Packaging

Specifications (measured at TA= 25°C, nominal input voltage (115/230VAC), full load and after warm-up)

BASIC CHARACTERISTICS				
Parameter	Condition	Min.	Typ.	Max.
Input Voltage Range		85VAC 120VDC		305VAC 430VDC
Input Current	full load, 115VAC full load, 230VAC		70mA 45mA	
Inrush Current	cold start at 25°C, 115VAC cold start at 25°C, 230VAC			15A 30A
No load Power Consumption	85-305VAC, 47-440Hz			40mW
Input Frequency Range	AC Input	47Hz		440Hz
Hold-up time	115VAC	18ms		
Operating Frequency Range	100% load at nominal Vin		55kHz	
Efficiency				see Selection Guide
Minimum Load			10%	

continued on next page



EN55024 Certified
EN60950-1 Certified
UL60950-1 Certified

Specifications (measured at $T_A = 25^\circ\text{C}$, nominal input voltage (115/230VAC), full load and after warm-up)

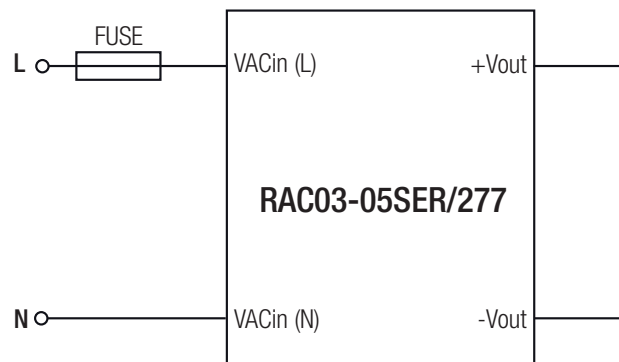
Output Ripple and Noise ⁽¹⁾	3.3Vout all others	250mVp-p 200mVp-p
<p>Notes: Note1: Ripple and Noise is the maximum peak-to-peak voltage value measured at the output with a 20MHz bandwidth, at rated line voltage at full load. And with a 47μF low-ESR electrolytic capacitor in parallel with a 0.1μF ceramic capacitor across output.</p>		

REGULATIONS		
Parameter	Condition	Value
Output Voltage Tolerance ⁽²⁾	3.3Vout	$\pm 4\%$ typ. / $\pm 8\%$ max.
	5Vout	$\pm 3.5\%$ typ. / $\pm 5\%$ max.
	12, 24Vout	$\pm 3\%$ typ. / $\pm 4\%$ max.
Line Voltage Regulation	low line to high line, full load	$\pm 0.7\%$ typ. / $\pm 1\%$ max.
Load Voltage Regulation	3.3Vout 10% to 100% load	$\pm 5.5\%$ typ. / $\pm 9\%$ max.
	5Vout 10% to 100% load	$\pm 5\%$ typ. / $\pm 7.5\%$ max.
	12, 24Vout 10% to 100% load	$\pm 4\%$ typ. / $\pm 5.5\%$ max.
<p>Notes: Note2: Includes initial voltage accuracy, thermal drift, line regulation and load regulation at rated input voltage and load conditions.</p>		

PROTECTIONS		
Parameter	Type	Value
Short Circuit Protection (SCP)		continuous, automatic recovery
Over Voltage Protection (OVP)	Zener Diode clamp	105% - 150%
Over Current Limit		120% - 190%
Isolation Voltage		3kVAC / 1 Minute
Isolation Resistance		1G Ω min.
Leakage Current	85-305VAC, 47-440Hz	10 μA max.

Notes:

Note3: An input fuse is recommended: T1A slow blow type.



Specifications (measured at $T_A=25^{\circ}\text{C}$, nominal input voltage (115/230VAC), full load and after warm-up)

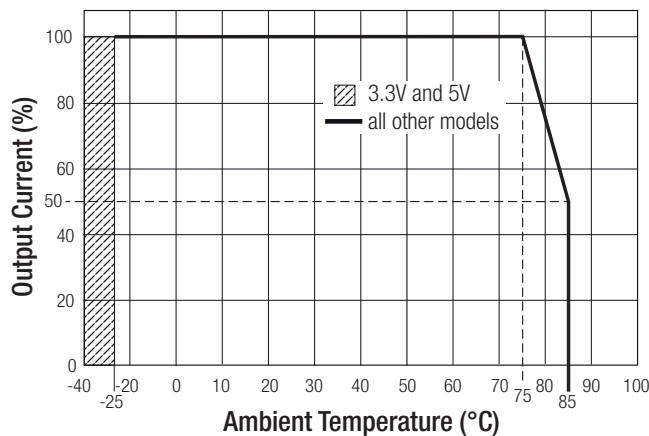
ENVIRONMENTAL		
Parameter	Condition	Value
Operating Temperature Range	230VAC, with derating (see graph)	-40°C to +85°C
Maximum Case Temperature		105°C
Thermal Impedance		9.5°C / W typ.
Humidity	non-condensing	5% - 95%, RH max.
MTBF ⁽³⁾	MIL-HDBK-217F, 115VAC, +25°C	3554 x 10 ³ hours
	MIL-HDBK-217F, 230VAC, +25°C	3219 x 10 ³ hours

Notes:

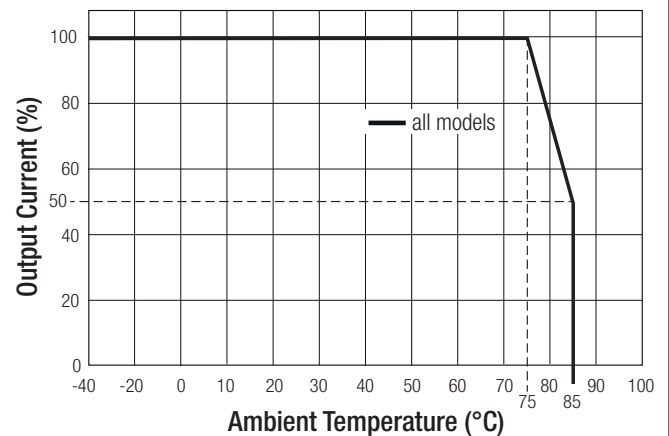
Note3: MTBF is referring RAC03-05SER/277

Derating Graph

@ 85-140VAC



@ 140-305VAC



SAFETY AND CERTIFICATIONS

Certificate Type	Report / File Number	Standard
EN General Safety	SPCLVD1208051	EN-60950-1, 2nd Edition
UL General Safety	E224736-X1-A24	UL-60950-1, 2nd Edition, 2014
Canada General Safety	E224736-X1-A24	CAN/CSA C22.2 No. 60950-1-07, 2nd Edition, 2014

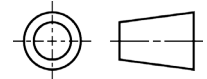
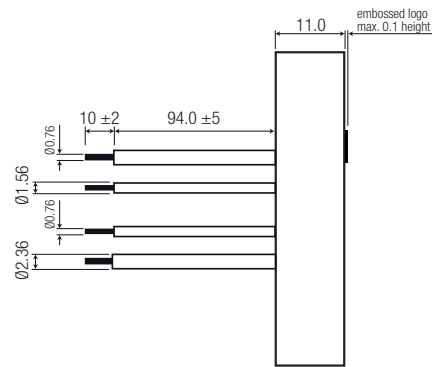
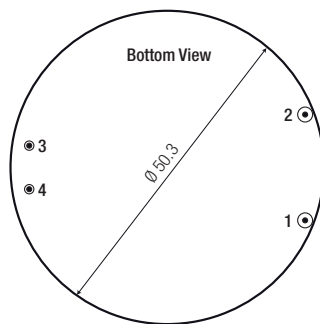
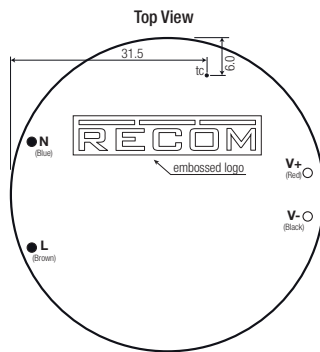
Certificate Type (Environmental)	Condition / Report or File Number	Standard / Criterion
ESD	Air ±5kV, Contact ±4kV	EN61000-4-2, Criteria B
Radiated Immunity	3V/m	EN61000-4-3, Criteria A
Fast Transient	AC Power Port: ±1kV	EN61000-4-4, Criteria B
Surge	AC Power Port: line to line: ±1kV	EN61000-4-5, Criteria B
Conducted Immunity	AC Power Port: 3V/m	EN61000-4-6, Criteria A
PMF	1 A/m	EN61000-4-8, Criteria A
Voltage Dips & Voltage Variations	Voltage Dips: >95% reduction	EN61000-4-11, Criteria B
	>30% reduction	EN61000-4-11, Criteria C
	Interruptions: >95% reduction	EN61000-4-11, Criteria C
Voltage		EN-61000-3-3
EMI Standard	Report: 1502CE17	EN55022, Class B EN55024
Over Voltage Category		OVC II

Specifications (measured at $T_A = 25^\circ\text{C}$, nominal input voltage (115/230VAC), full load and after warm-up)

DIMENSION and PHYSICAL CHARACTERISTICS

Parameter	Type	Value
Case Material		UL94V-0, black plastic
Potting Material		UL94V-0, Epoxy
Package Dimension (LxWxH)		50.3 x 50.3 x 11.0mm
Package Weight		41g typ.

Dimension Drawing (mm)



Wired Connections

Wired Color	Type	Wire Composition	Function
1, brown	UL-1015, AWG22	17/0.16	VAC in (L)
2, blue	UL-1015, AWG22	17/0.16	VAC in (N)
3, red	UL-1430, AWG22	17/0.16	+Vout
4, black	UL-1430, AWG22	17/0.16	-Vout

Tolerance: xx.x= ±0.5mm
xx.xx= ±0.35mm

PACKAGING INFORMATION

Parameter	Type	Value
Packaging Dimension (LxWxH)	Cardboard box	195 x 170 x 140mm
Packaging Quantity		12 pcs
Storage Temperature Range		-40°C to +85°C